

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently Amended) A method ~~for~~of forming a bump comprising the steps of:

forming a resist layer ~~so that~~to have a through-hole ~~formed therein~~ is located over a pad, the resist layer having an inner surface to define the through-hole, the inner surface having a portion projecting inwardly in the through-hole; and

forming a metal post on the pad conforming to the shape of the through-hole,

B1
~~wherein the metal post is formed so as to have a shape in which is formed a side surface having a recess formed therein for receiving a soldering or brazing material.~~

2. Cancelled

3. (Currently Amended) ~~The method for forming a bump according to claim 1, wherein the resist layer is formed so that part of the resist layer remains at the center of the through-hole~~A method of forming a bump comprising the steps of:

forming a resist layer to have a through-hole located over a pad, the through-hole having a ring shape so that part of the resist layer remains at a center of the through-hole; and

forming a metal post on the pad conforming to a shape of the through-hole
so that the metal post is not higher than the resist layer and the metal post has a hole
exposing the pad.

4. (Currently Amended) ~~The method for forming a bump according to claim 1,~~
~~wherein a plurality of the through-holes are formed in the resist layer so~~
~~that at least a part of each of the through-holes is superposed on the pad, and~~
~~a plurality of the metal posts are formed, each of the plurality of the metal~~
~~posts conforming to each of the through-holes to form the recess for receiving the~~
~~soldering or brazing material between the adjacent metal posts of the plurality of the~~
~~metal posts on the pad.~~A method of forming a bump comprising the steps of:

forming a resist layer to have through-holes located over a pad; and
forming metal posts on the pad conforming to a shape of the through-
holes so as to have a space between each of the metal posts for receiving a soldering
or brazing material.

5. (Currently Amended) ~~The method for forming a bump according to claim 1,~~
~~wherein the metal post comprises first and second metal posts,~~
~~wherein the first metal post is formed in a state in which the resist layer is~~
formed, and the second metal post is formed on the first metal post.

6. (Currently Amended) A method for forming a bump comprising the steps of:
~~forming a resist layer so that a through-hole formed therein is located on a pad; and~~
~~forming a metal layer to be electrically connected to the pad conforming to the shape of the through-hole;~~
~~wherein the metal layer is formed so as to have a shape in which is formed a region for receiving a soldering or brazing material; The method of forming a bump according to claim 1,~~

~~wherein the metal layer post comprises first and second metal layers posts,~~

~~wherein the first metal layer post is formed in a state in which the resist layer is formed, and~~

~~after removing the resist layer, the second metal layer post is formed so as to cover a surface of the first metal layer post.~~

7. (Currently Amended) The method for forming a bump according to claim 5,

~~wherein the pad is covered with an insulating film,~~

~~the resist layer is formed on the insulating film,~~

~~an opening for exposing at least part of the pad is formed in the insulating film after forming the through-hole in the resist layer, and~~

~~the first metal post is formed on the pad in a state in which the resist layer is formed.~~

8. (Currently Amended) The method ~~for~~of forming a bump according to claim 6,
wherein the pad is covered with an insulating film,
the resist layer is formed on the insulating film,
an opening ~~for~~ exposing at least part of the pad is formed in the insulating
film after forming the through-hole in the resist layer, and
the first metal layer post is formed on the pad in a state in which the resist
layer is formed.

9. (Currently Amended) The method ~~for~~of forming a bump according to claim 5,
wherein the first and second metal posts are formed by electroless plating.

10. (Currently Amended) The method ~~for~~of forming a bump according to claim 6,
wherein the first and second metal layerposts are formed by electroless
plating.

11. (Currently Amended) The method ~~for~~of forming a bump according to claim 5,
wherein the first metal post is formed of a material containing nickel.

12. (Currently Amended) The method ~~for~~of forming a bump according to claim 6,
wherein the first metal layer post is formed of a material containing nickel.

13. (Currently Amended) The method ~~for~~of forming a bump according to claim 5,
wherein the second metal post is formed of a material containing gold.

14. (Currently Amended) The method ~~for~~of forming a bump according to claim 6, wherein the second metal ~~layer~~post is formed of a material containing gold.

15. (Currently Amended) A method of fabricating a semiconductor device comprising the steps of:

bonding a plurality of metal posts to a plurality of leads through a soldering or brazing material, each of the metal posts formed on each of a plurality of pads of a semiconductor chip, each of the metal posts having ~~a shape-a side surface~~ in which is formed a recess for receiving the soldering or brazing material,

wherein the soldering or brazing material, when melted, is allowed to flow into the recess of each of the metal posts for receiving the soldering or brazing material so as not to spread onto an adjacent pad of the plurality of pads.

16. Cancelled

17. (Currently Amended) ~~The method of fabricating a semiconductor device according to claim 15,~~

~~wherein one of the metal posts is formed so that the recess is formed in the direction of the height of the metal posts, and~~

~~the soldering or brazing material is allowed to flow into the recess.~~ A method of fabricating a semiconductor device comprising the steps of:

bonding a plurality of metal posts to a plurality of leads through a soldering or brazing material, each of the metal posts formed on one of a plurality of pads of a semiconductor chip, each of the metal posts having a hole exposing the pad,

wherein the soldering or brazing material, when melted, is allowed to flow into the hole of each of the metal posts for receiving the soldering or brazing material so as not to spread onto an adjacent pad of the plurality of pads.

18. (Currently Amended) ~~The method of fabricating a semiconductor device according to claim 15,~~

~~wherein two or more metal posts of the plurality of metal posts are formed so as to be connected to one of the pads, and~~

~~the soldering or brazing material is allowed to flow into a region formed between the adjacent metal posts of the plurality of metal posts on one of the pads.~~ A method of fabricating a semiconductor device comprising the steps of:

bonding metal posts to a lead through a soldering or brazing material, the metal posts formed on a pad of a semiconductor chip, a space being provided between each of the metal posts,

wherein the soldering or brazing material, when melted, is allowed to flow into the space for receiving the soldering or brazing material so as not to spread onto another pad adjacent to the pad.

Rule 1.126
30

19. (New) The method of forming a bump according to claim 3,

wherein the metal post comprises first and second metal posts,
wherein the first metal post is formed in a state in which the resist layer is
formed, and the second metal post is formed on the first metal post.

31

20. (New) The method of forming a bump according to claim 3,
wherein the metal post comprises first and second metal posts,
wherein the first metal post is formed in a state in which the resist layer is
formed, and

after removing the resist layer, the second metal post is formed so as to
cover a surface of the first metal post.

32

21. (New) The method of forming a bump according to claim 19,
wherein the pad is covered with an insulating film,
the resist layer is formed on the insulating film,
an opening for exposing at least part of the pad is formed in the insulating
film after forming the through-hole in the resist layer, and
the first metal post is formed on the pad in a state in which the resist layer
is formed.

33

22. (New) The method of forming a bump according to claim 20,
wherein the pad is covered with an insulating film,
the resist layer is formed on the insulating film,

an opening exposing at least part of the pad is formed in the insulating film after forming the through-hole in the resist layer, and
the first metal post is formed on the pad in a state in which the resist layer is formed.

34
23. (New) The method of forming a bump according to claim 19,
wherein the first and second metal posts are formed by electroless plating.

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24. (New) The method of forming a bump according to claim 20,
wherein the first and second metal posts are formed by electroless plating.

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25. (New) The method of forming a bump according to claim 19,
wherein the first metal post is formed of a material containing nickel.

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26. (New) The method of forming a bump according to claim 20,
wherein the first metal post is formed of a material containing nickel.

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27. (New) The method of forming a bump according to claim 19,
wherein the second metal post is formed of a material containing gold.

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28. (New) The method of forming a bump according to claim 20,
wherein the second metal post is formed of a material containing gold.

40

29. (New) The method of forming a bump according to claim 4,

wherein the metal post comprises first and second metal posts,

wherein the first metal post is formed in a state in which the resist layer is formed, and the second metal post is formed on the first metal post.

41

30. (New) The method of forming a bump according to claim 4,

wherein the metal post comprises first and second metal posts,

wherein the first metal post is formed in a state in which the resist layer is formed, and

after removing the resist layer, the second metal post is formed so as to cover a surface of the first metal post.

42

31. (New) The method of forming a bump according to claim 29,

wherein the pad is covered with an insulating film,

the resist layer is formed on the insulating film,

an opening for exposing at least part of the pad is formed in the insulating film after forming the through-hole in the resist layer, and

the first metal post is formed on the pad in a state in which the resist layer is formed.

43

32. (New) The method of forming a bump according to claim 30,

wherein the pad is covered with an insulating film,

the resist layer is formed on the insulating film,

an opening exposing at least part of the pad is formed in the insulating film after forming the through-hole in the resist layer, and
the first metal post is formed on the pad in a state in which the resist layer is formed.

44

33. (New) The method of forming a bump according to claim 29,

wherein the first and second metal posts are formed by electroless plating.

45

34. (New) The method of forming a bump according to claim 30,

wherein the first and second metal posts are formed by electroless plating.

46

35. (New) The method of forming a bump according to claim 29,

wherein the first metal post is formed of a material containing nickel.

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36. (New) The method of forming a bump according to claim 30,

wherein the first metal post is formed of a material containing nickel.

48

37. (New) The method of forming a bump according to claim 29,

wherein the second metal post is formed of a material containing gold.

49

38. (New) The method of forming a bump according to claim 30,

wherein the second metal post is formed of a material containing gold.